

ATTACHMENT 1

Inflammable gas or vapor	Experimental maximum safe gap	
	mm	in.
Methane	1.170	0.046
Blast furnace gas	1.193	0.047
Propane	0.965	0.038
Butane	1.066	0.042
Pentane	1.016	0.040
Hexane	0.965	0.038
Heptane	0.965	0.038
Iso-octane	1.040	0.041
Decane	1.016	0.040
Benzene	0.99	0.039
Xylene	1.066	0.042
Cyclohexane	0.94	0.037
Acetone	1.016	0.040
Ethylene	0.71	0.028
Methyl-ethyl-ketone	1.016	0.040
Carbon monoxide	0.915	0.036
Methyl-acetate	0.990	0.039
Ethyl-acetate	1.04	0.041
Propyl-acetate	1.04	0.041
Butyl-acetate	1.016	0.040
Amyl-acetate	0.99	0.039
Methyl alcohol	0.915	0.036
Ethyl alcohol	1.016	0.040
Iso-butyl-alcohol	0.965	0.038
Butyl-alcohol (Normal)	0.94	0.037
Amyl-alcohol	0.99	0.039
Ethyl-ether	0.864	0.034
Coal gas (H ₂ 57%)	0.482	0.019
Acetylene	<0.025	<0.001
Carbon disulphide	0.203	0.008
Hydrogen	0.102	0.004
Blue water gas (H ₂ 53% CO 47%)	0.203	0.008
Ethyl nitrate	<0.025	<0.001
Ammonia	13.33	10.133
Ethylene oxide	0.65	0.026
Ethyl nitrite	0.922	0.038

¹Approximately.

[CGD 88-102, 55 FR 25441, June 21, 1990, as amended by USCG-1999-5832, 64 FR 34715, June 29, 1999; USCG-2000-7223, 65 FR 40058, June 29, 2000]

APPENDIX C TO PART 154—GUIDELINES FOR DETERMINING AND EVALUATING REQUIRED RESPONSE RESOURCES FOR FACILITY RESPONSE PLANS

1. Purpose

1.1 The purpose of this appendix is to describe the procedures for identifying response resources to meet the requirements of subpart F of this part. These guidelines will be used by the facility owner or operator in preparing the response plan and by the Captain of the Port (COTP) when reviewing them. Response resources identified in subparts H and I of this part should be selected using the guidelines in section 2 and Table 1 of this appendix.

2. Equipment Operability and Readiness

2.1 All equipment identified in a response plan must be designed to operate in the con-

ditions expected in the facility's geographic area. These conditions vary widely based on location and season. Therefore, it is difficult to identify a single stockpile of response equipment that will function effectively in each geographic location.

2.2 Facilities handling, storing, or transporting oil in more than one operating environment as indicated in Table 1 of this appendix must identify equipment capable of successfully functioning in each operating environment.

2.3 When identifying equipment for response plan credit, a facility owner or operator must consider the inherent limitations in the operability of equipment components and response systems. The criteria in Table 1 of this appendix should be used for evaluating the operability in a given environment. These criteria reflect the general conditions in certain operating areas.

2.3.1 The Coast Guard may require documentation that the boom identified in a response plan meets the criteria in Table 1. Absent acceptable documentation, the Coast Guard may require that the boom be tested to demonstrate that it meets the criteria in Table 1. Testing must be in accordance with ASTM F 715 (incorporated by reference, see §154.106), or other tests approved by the Coast Guard.

2.4 Table 1 of this appendix lists criteria for oil recovery devices and boom. All other equipment necessary to sustain or support response operations in the specified operating environment must be designed to function in the same conditions. For example, boats which deploy or support skimmers or boom must be capable of being safely operated in the significant wave heights listed for the applicable operating environment.

2.5 A facility owner or operator must refer to the applicable local contingency plan or ACP, as appropriate, to determine if ice, debris, and weather-related visibility are significant factors in evaluating the operability of equipment. The local contingency plan or ACP will also identify the average temperature ranges expected in the facility's operating area. All equipment identified in a response plan must be designed to operate within those conditions or ranges.

2.6 The requirements of subparts F, G, H and I of this part establish response resource mobilization and response times. The distance of the facility from the storage location of the response resources must be used to determine whether the resources can arrive on scene within the stated time. A facility owner or operator shall include the time for notification, mobilization, and travel time of response resources identified to meet the maximum most probable discharge and Tier 1 worst case discharge response time requirements. For subparts F and G, tier 2 and 3 response resources must be notified and

mobilized as necessary to meet the requirements for arrival on scene in accordance with §§154.1045 or 154.1047 of subpart F, or §154.1135 of subpart G, as appropriate. An on water speed of 5 knots and a land speed of 35 miles per hour is assumed unless the facility owner or operator can demonstrate otherwise.

2.7 For subparts F and G, in identifying equipment, the facility owner or operator shall list the storage location, quantity, and manufacturer's make and model. For oil recovery devices, the effective daily recovery capacity, as determined using section 6 of this appendix must be included. For boom, the overall boom height (draft plus freeboard) should be included. A facility owner or operator is responsible for ensuring that identified boom has compatible connectors.

2.8 For subparts H and I, in identifying equipment, the facility owner or operator shall list the storage location, quantity, and manufacturer's make and model. For boom, the overall boom height (draft plus freeboard) should be included. A facility owner or operator is responsible for ensuring that identified boom has compatible connectors.

3. Determining Response Resources Required for the Average Most Probable Discharge

3.1 A facility owner or operator shall identify sufficient response resources available, through contract or other approved means as described in §154.1028(a), to respond to the average most probable discharge. The equipment must be designed to function in the operating environment at the point of expected use.

3.2 The response resources must include:

3.2.1 1,000 feet of containment boom or two times the length of the largest vessel that regularly conducts oil transfers to or from the facility, whichever is greater, and a means deploying it available at the spill site within 1 hour of the discovery of a spill.

3.2.2 Oil recovery devices with an effective daily recovery capacity equal to the amount of oil discharged in an average most probable discharge or greater available at the facility within 2 hours of the detection of an oil discharge.

3.2.3 Oil storage capacity for recovered oily material indicated in section 9.2 of this appendix.

4. Determining Response Resources Required for the Maximum Most Probable Discharge

4.1 A facility owner or operator shall identify sufficient response resources available, by contract or other approved means as described in §154.1028(a), to respond to discharges up to the maximum most probable discharge volume for that facility. This will require response resources capable of con-

taining and collecting up to 1,200 barrels of oil or 10 percent of the worst case discharge, whichever is less. All equipment identified must be designed to operate in the applicable operating environment specified in Table 1 of this appendix.

4.2 Oil recovery devices identified to meet the applicable maximum most probable discharge volume planning criteria must be located such that they arrive on scene within 6 hours in higher volume port areas (as defined in §154.1020) and the Great Lakes and within 12 hours in all other areas.

4.3 Because rapid control, containment, and removal of oil is critical to reduce spill impact, the effective daily recovery capacity for oil recovery devices must equal 50 percent of the planning volume applicable for the facility as determined in section 4.1 of this appendix. The effective daily recovery capacity for oil recovery devices identified in the plan must be determined using the criteria in section 6 of this appendix.

4.4 In addition to oil recovery capacity, the plan must identify sufficient quantities of containment boom available, by contract or other approved means as described in §154.1028(a), to arrive within the required response times for oil collection and containment and for protection of fish and wildlife and sensitive environments. While the regulation does not set required quantities of boom for oil collection and containment, the response plan must identify and ensure, by contract or other approved means as described in §154.1028(a), the availability of the boom identified in the plan for this purpose.

4.5 The plan must indicate the availability of temporary storage capacity to meet the guidelines of section 9.2 of this appendix. If available storage capacity is insufficient to meet this level, then the effective daily recovery capacity must be derated to the limits of the available storage capacity.

4.6 The following is an example of a maximum most probable discharge volume planning calculation for equipment identification in a higher volume port area: The facility's worst case discharge volume is 20,000 barrels. Ten percent of this is 2,000 barrels. Since this is greater than 1,200 barrels, 1,200 barrels is used as the planning volume. The effective daily recovery capacity must be 50 percent of this, or 600 barrels per day. The ability of oil recovery devices to meet this capacity will be calculated using the procedures in section 6 of this appendix. Temporary storage capacity available on scene must equal twice the daily recovery rate as indicated in section 9 of this appendix, or 1,200 barrels per day. This is the information the facility owner or operator will use to identify and ensure the availability of, through contract or other approved means as described in §154.1028(a), the required response resources. The facility owner will also

need to identify how much boom is available for use.

5. Determining Response Resources Required for the Worst Case Discharge to the Maximum Extent Practicable

5.1 A facility owner or operator shall identify and ensure availability of, by contract or other approved means, as described in §154.1028(a), sufficient response resources to respond to the worst case discharge of oil to the maximum extent practicable. Section 7 of this appendix describes the method to determine the required response resources.

5.2 Oil spill response resources identified in the response plan and available through contract or other approved means, as described in §154.1028(a), to meet the applicable worst case discharge planning volume must be located such that they can arrive at the scene of a discharge within the times specified for the applicable response tiers listed in §154.1045.

5.3 The effective daily recovery capacity for oil recovery devices identified in a response plan must be determined using the criteria in section 6 of this appendix. A facility owner or operator shall identify the storage locations of all response resources that must be used to fulfill the requirements for each tier. The owner or operator of a facility whose required daily recovery capacity exceeds the applicable response capability caps in Table 5 of this appendix shall identify sources of additional equipment, their locations, and the arrangements made to obtain this equipment during a response. The owner or operator of a facility whose calculated planning volume exceeds the applicable contracting caps in Table 5 shall identify sources of additional equipment equal to twice the cap listed in Tiers 1, 2, and 3 or the amount necessary to reach the calculated planning volume, whichever is lower. The resources identified above the cap must be capable of arriving on scene not later than the Tiers 1, 2, and 3 response times in §154.1045. No contract is required. While general listings of available response equipment may be used to identify additional sources, a response plan must identify the specific sources, locations, and quantities of equipment that a facility owner or operator has considered in his or her planning. When listing Coast Guard classified oil spill removal organization(s) which have sufficient removal capacity to recover the volume above the response capability cap for the specific facility, as specified in Table 5 of this appendix, it is not necessary to list specific quantities of equipment.

5.4 A facility owner or operator shall identify the availability of temporary storage capacity to meet the requirements of section 9.2 of this appendix. If available storage capacity is insufficient to meet this requirement, then the effective daily recovery

capacity must be derated to the limits of the available storage capacity.

5.5 When selecting response resources necessary to meet the response plan requirements, the facility owner or operator must ensure that a portion of those resources are capable of being used in close-to-shore response activities in shallow water. The following percentages of the on-water response equipment identified for the applicable geographic area must be capable of operating in waters of 6 feet or less depth:

- (i) Offshore—10 percent
- (ii) Nearshore/inland/Great Lakes/ivers and canals—20 percent.

5.6 In addition to oil spill recovery devices, a facility owner or operator shall identify sufficient quantities of boom that are available, by contract or other approved means as described in §154.1028(a), to arrive on scene within the required response times for oil containment and collection. The specific quantity of boom required for collection and containment will depend on the specific recovery equipment and strategies employed. A facility owner or operator shall also identify sufficient quantities of oil containment boom to protect fish and wildlife and sensitive environments for the number of days and geographic areas specified in Table 2. Sections 154.1035(b)(4)(iii) and 154.1040(a), as appropriate, shall be used to determine the amount of containment boom required, through contract or other approved means as described in §154.1028(a), to protect fish and wildlife and sensitive environments.

5.7 A facility owner or operator must also identify, through contract or other approved means as described in §154.1028(a), the availability of an oil spill removal organization capable of responding to a shoreline cleanup operation involving the calculated volume of oil and emulsified oil that might impact the affected shoreline. The volume of oil that must be planned for is calculated through the application of factors contained in Tables 2 and 3. The volume calculated from these tables is intended to assist the facility owner or operator in identifying a contractor with sufficient resources and expertise. This planning volume is not used explicitly to determine a required amount of equipment and personnel.

6. Determining Effective Daily Recovery Capacity for Oil Recovery Devices

6.1 Oil recovery devices identified by a facility owner or operator must be identified by manufacturer, model, and effective daily recovery capacity. These rates must be used to determine whether there is sufficient capacity to meet the applicable planning criteria for the average most probable discharge, maximum most probable discharge, and worst case discharge to the maximum extent practicable.

6.2 For the purpose of determining the effective daily recovery capacity of oil recovery devices, the formula listed in section 6.2.1 of this appendix will be used. This method considers potential limitations due to available daylight, weather, sea state, and percentage of emulsified oil in the recovered material. The Coast Guard may assign a lower efficiency factor to equipment listed in a response plan if it determines that such a reduction is warranted.

6.2.1 The following formula must be used to calculate the effective daily recovery capacity:

$R = T \times 24 \text{ hours} \times E$

R=Effective daily recovery capacity

T=Throughout rate in barrels per hour (nameplate capacity)

E=20 percent Efficiency factor (or lower factor as determined by Coast Guard)

6.2.2 For those devices in which the pump limits the throughput of liquid, throughput rate will be calculated using the pump capacity.

6.2.3 For belt or mop type devices, the throughput rate will be calculated using the speed of the belt or mop through the device, assumed thickness of oil adhering to or collected by the device, and surface area of the belt or mop. For purposes of this calculation, the assumed thickness of oil will be 1/4 inch.

6.2.4 Facility owners or operators including oil recovery devices whose throughput is not measurable using a pump capacity or belt/mop speed may provide information to support an alternative method of calculation. This information must be submitted following the procedures in paragraph 6.3.2 of this appendix.

6.3 As an alternative to 6.2, a facility owner or operator may submit adequate evidence that a different effective daily recovery capacity should be applied for a specific oil recovery device. Adequate evidence is actual verified performance data in spill conditions or tests using ASTM F 631 (incorporated by reference, see §154.106), or an equivalent test approved by the Coast Guard.

6.3.1 The following formula must be used to calculate the effective daily recovery capacity under this alternative:

$R = D \times U$

R=Effective daily recovery capacity

D=Average Oil Recovery Rate in barrels per hour (Item 26 in ASTM F 808; Item 13.2.16 in ASTM F 631; or actual performance data)

U=Hours per day that a facility owner or operator can document capability to operate equipment under spill conditions. Ten hours per day must be used unless a facility owner or operator can demonstrate that the recovery operation can be sustained for longer periods.

6.3.2 A facility owner or operator proposing a different effective daily recovery

rate for use in a response plan shall provide data for the oil recovery devices listed. The following is an example of these calculations:

A weir skimmer identified in a response plan has a manufacturer's rated throughput at the pump of 267 gallons per minute (gpm).

267 gpm=381 barrels per hour

$R = 381 \times 24 \times .2 = 1829$ barrels per day

After testing using ASTM procedures, the skimmer's oil recovery rate is determined to be 220 gpm. The facility owner or operator identifies sufficient response resources available to support operations 12 hours per day.

220 gpm=314 barrels per hour

$R = 314 \times 12 = 3768$ barrels per day

The facility owner or operator will be able to use the higher rate if sufficient temporary oil storage capacity is available. Determinations of alternative efficiency factors under paragraph 6.2 or alternative effective daily recovery capacities under paragraph 6.3 of this appendix will be made by Commandant, (CG-535), 2100 2nd St., SW., Stop 7363, Washington, DC 20593-7363. Response contractors or equipment manufacturers may submit required information on behalf of multiple facility owners or operators directly in lieu of including the request with the response plan submission.

7. Calculating the Worst Case Discharge Planning Volumes

7.1 The facility owner or operator shall plan for a response to a facility's worst case discharge. The planning for on-water recovery must take into account a loss of some oil to the environment due to evaporative and natural dissipation, potential increases in volume due to emulsification, and the potential for deposit of some oil on the shoreline.

7.2 The following procedures must be used to calculate the planning volume used by a facility owner or operator for determining required on water recovery capacity:

7.2.1 The following must be determined: The worst case discharge volume of oil in the facility; the appropriate group(s) for the type of oil handled, stored, or transported at the facility (non-persistent (Group I) or persistent (Groups II, III, or IV)); and the facility's specific operating area. Facilities which handle, store, or transport oil from different petroleum oil groups must calculate each group separately. This information is to be used with Table 2 of this appendix to determine the percentages of the total volume to be used for removal capacity planning. This table divides the volume into three categories: Oil lost to the environment; oil deposited on the shoreline; and oil available for on-water recovery.

7.2.2 The on-water oil recovery volume must be adjusted using the appropriate emulsification factor found in Table 3 of this appendix. Facilities which handle, store, or

transport oil from different petroleum groups must assume that the oil group resulting in the largest on-water recovery volume will be stored in the tank or tanks identified as constituting the worst case discharge.

7.2.3 The adjusted volume is multiplied by the on-water oil recovery resource mobilization factor found in Table 4 of this appendix from the appropriate operating area and response tier to determine the total on-water oil recovery capacity in barrels per day that must be identified or contracted for to arrive on-scene with the applicable time for each response tier. Three tiers are specified. For higher volume port areas, the contracted tiers of resources must be located such that they can arrive on scene within 6, 30, and 54 hours of the discovery of an oil discharge. For all other river, inland, nearshore, offshore areas, and the Great Lakes, these tiers are 12, 36, and 60 hours.

7.2.4 The resulting on-water recovery capacity in barrels per day for each tier must be used to identify response resources necessary to sustain operations in the applicable operating area. The equipment must be capable of sustaining operations for the time period specified in Table 2 of this appendix. The facility owner or operator must identify and ensure the availability, through contract or other approved means as described in §154.1028(a), of sufficient oil spill recovery devices to provide the effective daily recovery oil recovery capacity required. If the required capacity exceeds the applicable cap specified in Table 5 of this appendix, then a facility owner or operator shall ensure, by contract or other approved means as described in §154.1028(a), only for the quantity of resources required to meet the cap, but shall identify sources of additional resources as indicated in §154.1045(m). The owner or operator of a facility whose planning volume exceeds the cap for 1993 must make arrangements to identify and ensure the availability, through contract or other approved means as described in §154.1028(a), of the additional capacity in 1998 or 2003, as appropriate. For a facility that handles, stores, or transports multiple groups of oil, the required effective daily recovery capacity for each group is calculated before applying the cap.

7.3 The following procedures must be used to calculate the planning volume for identifying shoreline cleanup capacity:

7.3.1 The following must be determined: The worst case discharge volume of oil for the facility; the appropriate group(s) for the type of oil handled, stored, or transported at the facility (non-persistent (Group I) or persistent (Groups II, III, or IV)); and the operating area(s) in which the facility operates. For a facility storing oil from different groups, each group must be calculated separately. Using this information, Table 2 of

this appendix must be used to determine the percentages of the total planning volume to be used for shoreline cleanup resource planning.

7.3.2 The shoreline cleanup planning volume must be adjusted to reflect an emulsification factor using the same procedure as described in section 7.2.2.

7.3.3 The resulting volume will be used to identify an oil spill removal organization with the appropriate shoreline cleanup capability.

7.3.4 The following is an example of the procedure described above: A facility receives oil from barges via a dock located on a bay and transported by piping to storage tanks. The facility handles Number 6 oil (specific gravity .96) and stores the oil in tanks where it is held prior to being burned in an electric generating plant. The MTR segment of the facility has six 18-inch diameter pipelines running one mile from the dock-side manifold to several storage tanks which are located in the non-transportation-related portion of the facility. Although the facility piping has a normal working pressure of 100 pounds per square inch, the piping has a maximum allowable working pressure (MAWP) of 150 pounds per square inch. At MAWP, the pumping system can move 10,000 barrels (bbls) of Number 6 oil every hour through each pipeline. The facility has a roving watchman who is required to drive the length of the piping every 2 hours when the facility is receiving oil from a barge. The facility operator estimates that it will take approximately 10 minutes to secure pumping operations when a discharge is discovered. Using the definition of worst case discharge provided in §154.1029(b)(ii), the following calculation is provided:

	bbls.
2 hrs + 0.17 hour × 10,000 bbls per hour	21,700
Piping volume = 37,322 ft ³ ÷ 5.6 ft ³ /bbl	+6,664
Discharge volume per pipe	28,364
Number of pipelines	×6
Worst case discharge from MTR facility	170,184

To calculate the planning volumes for onshore recovery:

Worst case discharge: 170,184 bbls. Group IV oil

Emulsification factor (from Table 3): 1.4

Operating Area impacted: Inland

Planned percent oil onshore recovery (from Table 2): Inland 70%

Planning volumes for onshore recovery: Inland 170,184 × 7 × 1.4 = 166,780 bbls.

Conclusion: The facility owner or operator must contract with a response resource capable of managing a 166,780 barrel shoreline cleanup.

To calculate the planning volumes for on-water recovery:

Worst case discharge: 170,184 bbls. Group IV oil

Emulsification factor (from Table 3): 1.4

Operating Area impacted: Inland

Planned percent oil on-water recovery (from Table 2): Inland 50%

Planning volumes for on-water recovery: Inland $170,184 \times .5 \times 1.4 = 119,128$ bbls.

To determine the required resources for on-water recovery for each tier, use the mobilization factors from Table 4:

	Tier 1	Tier 2	Tier 3
Inland = 119,128 bbls.	$\times .15$	$\times .25$	$\times .40$
Barrels per day (bpd)	17,869	29,782	47,652

Conclusion: Since the requirements for all tiers for inland exceed the caps, the facility owner will only need to contract for 10,000 bpd for Tier 1, 20,000 bpd for Tier 2, and 40,000 bpd for Tier 3. Sources for the bpd on-water recovery resources above the caps for all three Tiers need only be identified in the response plan.

Twenty percent of the capability for Inland, for all tiers, must be capable of operating in water with a depth of 6 feet or less.

The facility owner or operator will also be required to identify or ensure, by contract or other approved means as described in §154.1028(a), sufficient response resources required under §§154.1035(b)(4) and 154.1045(k) to protect fish and wildlife and sensitive environments identified in the response plan for the worst case discharge from the facility.

The COTP has the discretion to accept that a facility can operate only a limited number of the total pipelines at a dock at a time. In those circumstances, the worst case discharge must include the drainage volume from the piping normally not in use in addition to the drainage volume and volume of oil discharged during discovery and shut down of the oil discharge from the operating piping.

8. Determining the Capability of High-Rate Response Methods

8.1. Calculate cumulative dispersant application capacity as follows:

8.1.1 A facility owner or operator must plan either for a dispersant capacity to respond to a facility's worst case discharge (WCD) of oil, or for the amount of the dispersant resource cap as required by §154.1045(i)(3) of this chapter, whichever is the lesser amount. When planning for the cumulative application capacity required, the calculations must account for the loss of some oil to the environment due to natural dissipation causes (primarily evaporation). The following procedure must be used to determine the cumulative application requirements:

8.1.2 Determine the WCD volume of oil in gallons and the appropriate oil group for the type of petroleum oil (persistent Groups II, III, and IV). For facilities with mixed petroleum oils, assume a total WCD volume using the group that constitutes the largest portion of the oil being handled or the group with the smallest natural dissipation factor;

8.1.3 Multiply the total WCD amount in gallons by the natural dissipation factor for the appropriate oil group as follows: Group II factor is 0.50; Group III is 0.30; and Group IV is 0.10. This represents the amount of oil that can be expected to be lost to natural dissipation in a nearshore environment. Subtract the oil amount lost to natural dissipation from the total WCD amount to determine the remaining oil available for treatment by dispersant application; and

8.1.4 Multiply the oil available for dispersant treatment by the dispersant-to-oil planning application ratio of 1 part dispersant to 20 parts oil (0.05). The resulting number represents the cumulative total dispersant-application capability that must be ensured available within the first 60 hours.

8.1.5(i) The following is an example of the procedure described in paragraphs 8.1.1 through 8.1.4 above: A facility with a 1,000,000 gallon WCD of crude oil (specific gravity 0.87) is located in an area with pre-authorization for dispersant use in the nearshore environment on the U.S. East Coast:

WCD: 1,000,000 gallons, Group III oil.

Natural dissipation factor for Group III: 30 percent.

General formula to determine oil available for dispersant treatment: $(WCD) - [(WCD) \times (\text{natural dissipation factor})] = \text{available oil}$.

E.g., $1,000,000 \text{ gal} - (1,000,000 \text{ gal} \times .30) = 700,000$ gallons of available oil.

Cumulative application capacity = Available oil \times planning application ratio (1 gal dispersant/20 gals oil = 0.05).

E.g., $700,000 \text{ gal oil} \times (0.05) = 35,000$ gallons cumulative dispersant-application capacity.

(ii) The requirements for cumulative dispersant-application capacity (35,000 gallons) for this facility's WCD is less than the overall dispersant capability for non-Gulf Coast waters required by §155.1045(i)(3) of this chapter. Because paragraph 8.1.1 of this appendix requires owners and operators to ensure the availability of the lesser of a facility's dispersant requirements for WCD or the amount of the dispersant cap provided for in §154.1045(i)(3), the facility in this example would be required to ensure the availability of 35,000 gallons of dispersant. More specifically, this facility would be required to meet the following tier requirements in §154.1045(i)(3), which total 35,000 gallons application:

Tier 1—4,125 gallons—Completed in 12 hours.

Tier 2—23,375 gallons—Completed in 36 hours.

Tier 3—7,500 gallons—Completed in 60 hours.

8.2 Determine Effective Daily Application Capacities (EDACs) for dispersant response systems as follows:

8.2.1 EDAC planning estimates for compliance with the dispersant application requirements in §154.1045(i)(3) are to be based on:

8.2.1.1 The spill occurring at the facility;

8.2.1.2 Specific dispersant application platform operational characteristics identified in the Dispersant Mission Planner 2 or as demonstrated by operational tests;

8.2.1.3 Locations of primary dispersant staging sites; and

8.2.1.4 Locations and quantities of dispersant stockpiles.

8.2.2 EDAC calculations with supporting documentation must be submitted to the NSFCC for classification as a Dispersant Oil Spill Removal Organization.

8.2.3(i) EDAC can also be calculated using the Dispersant Mission Planner 2 (DMP2). The DMP2 is a downloadable application that calculates EDAC for different dispersant response systems. It is located on the Internet at: <http://www.response.restoration.noaa.gov/spilltools>.

(ii) The DMP2 contains operating information for the vast majority of dispersant application platforms, including aircraft, both rotary and fixed wing, and vessels. The DMP2 produces EDAC estimates by performing calculations based on performance parameters of dispersant application platforms, locations of primary dispersant staging sites, home-based airport or port locations, and the facility location (for the spill site).

8.2.4 For each Captain of the Port zone where a dispersant response capability is required, the response plan must identify:

8.2.4.1 The type, number, and location of each dispersant-application platform intended for use to meet dispersant delivery requirements specified in §154.1045(i)(3) of this chapter;

8.2.4.2 The amount and location of available dispersant stockpiles to support each platform; and,

8.2.4.3 A primary staging site for each platform that will serve as its base of operations for the duration of the response.

8.3 In addition to the equipment and supplies required, a facility owner or operator must identify a source of support to conduct the monitoring and post-use effectiveness evaluation required by applicable regional plans and ACPs.

8.4 Identification of the resources for dispersant application does not imply that the use of this technique will be authorized. Actual authorization for use during a spill response will be governed by the provisions of the National Oil and Hazardous Substances Contingency Plan (40 CFR part 300) and the applicable Local or Area Contingency Plan.

9. Additional Equipment Necessary To Sustain Response Operations

9.1 A facility owner or operator is responsible for ensuring that sufficient numbers of trained personnel and boats, aerial spotting aircraft, containment boom, sorbent materials, boom anchoring materials, and other supplies are available to sustain response operations to completion. All such equipment must be suitable for use with the primary equipment identified in the response plan. A facility owner or operator is not required to list these response resources, but shall certify their availability.

9.2 A facility owner or operator shall evaluate the availability of adequate temporary storage capacity to sustain the effective daily recovery capacities from equipment identified in the plan. Because of the inefficiencies of oil spill recovery devices, response plans must identify daily storage capacity equivalent to twice the effective daily recovery rate required on scene. This temporary storage capacity may be reduced if a facility owner or operator can demonstrate by waste stream analysis that the efficiencies of the oil recovery devices, ability to decant waste, or the availability of alternative temporary storage or disposal locations will reduce the overall volume of oily material storage requirement.

9.3 A facility owner or operator shall ensure that his or her planning includes the capability to arrange for disposal of recovered oil products. Specific disposal procedures will be addressed in the applicable ACP.

TABLE 1—RESPONSE RESOURCE OPERATING CRITERIA OIL RECOVERY DEVICES

Operating environment	Significant wave height ¹	Sea State
Rivers and Canals	≤1 Foot	1
Inland	≤3 feet	2
Great Lakes	≤4 feet	2-3
Ocean	≤6 feet	3-4

BOOM				
Boom property	Use			
	Rivers and canals	Inland	Great Lakes	Ocean
Significant Wave Height ¹	≤1	≤3	≤4	≤6
Sea State	1	2	2–3	3–4
Boom height—in. (draft plus freeboard)	6–18	18–42	18–42	≤42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
Total Tensile Strength—lbs.	4,500	15–20,000	15–20,000	≤20,000
Skirt Fabric Tensile Strength—lbs	200	300	300	500
Skirt Fabric Tear Strength—lbs	100	100	100	125

¹ Oil recovery devices and boom must be at least capable of operating in wave heights up to and including the values listed in Table 1 for each operating environment.

TABLE 2—REMOVAL CAPACITY PLANNING TABLE

Spill location	Rivers and canals			Nearshore/inland Great Lakes			Offshore		
Sustainability of on-water oil recovery	3 Days			4 Days			6 Days		
Oil group	% Natural dissipation	% Recovered floating oil	% Oil on shore	% Natural dissipation	% Recovered floating oil	% Oil on shore	% Natural dissipation	% Recovered floating oil	% Oil on shore
1 Non-persistent oils	80	10	10	80	20	10	95	5	/
2 Light crudes	40	15	45	50	50	30	75	25	5
3 Medium crudes and fuels	20	15	65	30	50	50	60	40	20
4 Heavy crudes and fuels	5	20	75	10	50	70	50	40	30

TABLE 3—EMULSIFICATION FACTORS FOR PETROLEUM OIL GROUPS

Non-Persistent Oil:	
Group I	1.0
Persistent Oil:	
Group II	1.8
Group III	2.0
Group IV	1.4

TABLE 4—ON WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

Operating Area	Tier 1	Tier 2	Tier 3
Rivers & Canals30	.40	.60
Inland/Nearshore/Great Lakes15	.25	.40
Offshore10	.165	.21

Note: These mobilization factors are for total response resources mobilized, not incremental response resources.

TABLE 5—RESPONSE CAPABILITY CAPS BY OPERATING AREA

	Tier 1	Tier 2	Tier 3
February 18, 1993:			
All except rivers and canals, Great Lakes.	10K bbls/day	20K bbls/day	40K bbls/day/
Great Lakes	5K bbls/day	10K bbls/day	20K bbls/day.
Rivers and canals	1,500 bbls/day	3,000 bbls/day	6,000 bbls/day.
February 18, 1998:			
All except rivers and canals, Great Lakes.	12.5K bbls/day	25K bbls/day	50K bbls/day.
Great Lakes	6.25K bbls/day	12.3K bbls/day	25K bbls/day.
Rivers and canals	1,875 bbls/day	3,750 bbls/day	7,500 bbls/day.
February 18, 2003:			
All except rivers & canals & Great Lakes.	12.5K bbls/day	25K bbls/day	50K bbls/day.
Great Lakes	6.25K bbls/day	12.3K bbls/day	25K bbls/day.
Rivers & canals	1,875 bbls/day	3,750 bbls/day	7,500 bbls/day.

Note: The caps show cumulative overall effective daily recovery capacity, not incremental increases.
TBD = To be determined.

[CGD 91–036, 61 FR 7933, Feb. 29, 1996, as amended by CGD 96–026, 61 FR 33666, June 28, 1996; USCG–1999–5151, 64 FR 67175, Dec. 1, 1999; USCG–2000–7223, 65 FR 40058, June 29, 2000; USCG–2005–21531, 70 FR 36349, June 23, 2005; USCG–2001–8661, 74 FR 45025, Aug. 31, 2009; USCG–2010–0351, 75 FR 36284, June 25, 2010]